

- 1 1. A method for monitoring effects of chemical agents on a sample, the method comprising the  
2 steps of:  
3 dispensing a plurality of chemical agents on a sample, wherein said chemical agents  
4 interact to alter an optical signal produced by said sample, and  
5 measuring said altered optical signal.
- 1 2. The method of claim 1, wherein said chemical agents interact to produce an additive effect on  
2 said optical signal.
- 1 3. The method of claim 1, wherein said chemical agents interact to reduce an intensity of said  
2 optical signal.
- 1 4. The method of claim 1, wherein said optical signal is a light spectrum.
- 1 5. The method of claim 4, wherein said light spectrum is a fluorescent spectrum.
- 1 6. The method of claim 1, wherein said optical signal is produced by an endogenous  
2 chromophore.
- 1 7. The method of claim 6, wherein said endogenous chromophore is a flourophore.
- 1 8. The method of claim 1, wherein said chemical agents are selected from the group consisting  
2 of acetic acid, formic acid, propionic acid, butyric acid, Lugol's iodine, Shiller's iodine,  
3 methylene blue, toluidine blue, and indigo carmine.
- 1 9. The method of claim 1, wherein said plurality of chemical agents are dispensed substantially  
2 simultaneously.

- 1 10. The method of claim 1, wherein said chemical agents are dispensed sequentially.
- 1 11. The method of claim 1, wherein said optical signal is measured over a predetermined time.
- 1 12. The method of claim 1, wherein at least one member of said plurality of chemical agents  
2 alters pH of said sample.
- 1 13. The method of claim 1, wherein at least one member of said plurality is selected from the  
2 group consisting of osmotic agents and ionic agents.
- 1 14. A method for monitoring effects of chemical agents on a sample, the method comprising the  
2 steps of:  
3 dispensing a chemical agent on a sample, and  
4 measuring a change in response to said chemical agent in an optical signal from an  
5 endogenous chromophore in said sample.
- 1 15. The method of claim 14, wherein said endogenous chromophore is a flourophore.
- 1 16. A method for monitoring effects of a chemical agent on a sample, the method comprising the  
2 steps of:  
3 dispensing a chemical agent on a sample,  
4 providing an automated triggering signal to initiate a measurement period relative to said  
5 dispensing step, and  
6 measuring a temporal evolution of an optical signal observed from said sample during said  
7 measurement period.
- 1 17. The method of claim 16, wherein said triggering signal is provided substantially  
2 simultaneously with said dispensing step.



- 1 27. The method of claim 25, wherein said aligning step comprises aligning said subset to  
2 compensate for relative motion between a first portion of said sample and a second portion of  
3 said sample.
- 1 28. The method of claim 25, wherein said measuring step is performed at predetermined times  
2 relative to said dispensing step.
- 1 29. The method of claim 25, wherein said sample is selected from the group consisting of  
2 cervical tissue, skin, colorectal tissue, and gastric tissue.
- 1 30. The method of claim 1, wherein said optical signal is approximated by a decay function.
- 1 31. The method of claim 6 or 14, wherein said endogenous molecule is selected from the group  
2 consisting of NADH, collagen, elastin, flavins, hemoglobin, and porphyrins.
- 1 32. The method of claim 4, wherein said spectrum is produced at least in part by light scattering  
2 properties of said tissue.

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